

A NEW SPECIES OF FILMY FERN
(HYMENOPHYLLACEAE: PTERIDOPHYTA)
FROM SOUTH INDIA

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ABSTRACT

Crepidomanes indicum, a new species of filmy fern is described and illustrated from southern Western Ghats of India.

RESUMEN

Se describe e ilustra *Crepidomanes indicum*, una nueva especie de helecho membranoso de los Ghats del suroeste de la India.

Crepidomanes is an Old World genus of more than a dozen species ranging from East African islands to Japan and Polynesia (Tagawa & Iwatsuki 1979). The name derived from two Greek words *viz.*, *Krepis* = slipper + *manes* = cup, alluding to the shape of the indusium (Stewart et al. 1983). The presence of striae and a submarginal pseudovein are the conspicuous diagnostic characters of this genus. Beddome (1883) has reported three species now known as *C. kurzii* (Bedd.) Tagawa & K. Iwats., *C. intramarginale* (Hook. & Grev.) Copel. and *C. bipunctatum* (Poir.) Copel. from South India. Later, Nair et al. (1992) and Manickam & Irudayaraj (1992) reported the occurrence of *C. latealatum* (Bosch) Copel. and *C. plicatum* (Bosch) Ching, respectively from the South India. Recently Madhusoodanan and Hameed (1997, 1998) reported *C. christii* (Copel.) Copel. and *C. agasthianum* Madhusoodanan & Hameed from the dense evergreen forests of western Ghats, South India.

While revising the genus *Crepidomanes* of India, the authors collected a very small filmy fern from the mature, dense, tropical evergreen forest of Thommankuthu in the foothills of the Western Ghats mountains in the

Idukki district of Kerala state, S. India (alt. 700 m; annual rainfall 3000 mm; temp 20–35°C). The plant shows a high degree of differentiation from the species previously described under the genus *Crepidomanes* (Beddome 1863, 1866, 1883; Copeland 1938; Devol 1975; Holttum 1954; Iwatsuki 1984, 1985; Jinn-Lai & Wang-Chueng 1994; Sledge 1968). It differs from other species in its smaller size, dark green, evenly pinnatifid fronds having the rachis-wing and segments with an entire margin; thin submarginal veins and cupular indusia with highly dilated mouths. The plant is described here as *Crepidomanes indicum*.

***Crepidomanes indicum* Hameed & Madhusoodanan, sp. nov. (Fig. 1)** TYPE: INDIA. Kerala: Idukki Dt.: Thommankuthu water fall, 600 m, 1 Sep 1996, C.A. Hameed CU 34880 (HOLOTYPE: CALI; ISOTYPES: K, MH).

Crepidomanes agasthiano affinis, sed frondibus atro-viridibus profunde, regulariter pinnatifidis segmentis aequalibus, margine recto, apice vadoso emarginato, venula falsa intra-marginali tenui, cellulis marginalibus latis unistratis contentis repletis differt. Sori 2–8 terminales, involucre cupuliformes, latiore quam longiore, partibus dimidiis involucrelibus plenissimis, ore maxime dilatato.

Rhizome filiform, long, creeping, profusely branched, less than 0.25 mm thick, bearing thick walled, dark brown, unicellular rhizoids, 0.5–1.5 mm long. Fronds scattered on rhizome at intervals of 2–4 mm; stipes 3–5 mm long, covered with profuse hairs like those of rhizomes (but smaller in size). Laminae regularly pinnatifid (pinnate-pinnatifid or rarely bipinnatifid) 2–7 mm long, thin, membranous. Pinnae 2 or 3-lobed, segments ca. 0.6–0.7 mm wide, margins entire, single-celled in thickness with shallowly emarginate apex. Laminar segments each with a single vein ending at the apex, arising alternately from the midrib, clothed with sparse, clavate trichomes; intramarginal pseudoveins thin and continuous, separated from the margin by a single row of comparatively broad, marginal cells; other false veins absent. Sori 2–8, embedded at the apices of distal segments, involucre cup-shaped, broader than long, ca. 1 × 1.2 mm, involucre halves over-full, mouths highly, dilated but without lips. Receptacle filiform, included. Sporangia subsessile, spherical with an oblique annulus composed of 16–21 indurated cells without any thin walled cells; spores tetrahedral, trilete, greenish, perineless, 30–43 µm in diameter, with a sparsely tuberculate exine.

Distribution.—*Crepidomanes indicum* is not very common and so far known only from Athirapally forest of Trichur district (ca. 200 km south), in addition to the type locality.

Ecology.—*Crepidomanes indicum* was found growing epiphytically on the trunks of the large trees (about 15–20 m height) in the dense evergreen riparian forests. The black wiry rhizome forms a prominent network on the bark of trees about 1.5 m above the ground. The species is confined to the trees growing very near to the streams.

Notes.—*Crepidomanes indicum* resembles *C. agasthianum* Madhusoodanan

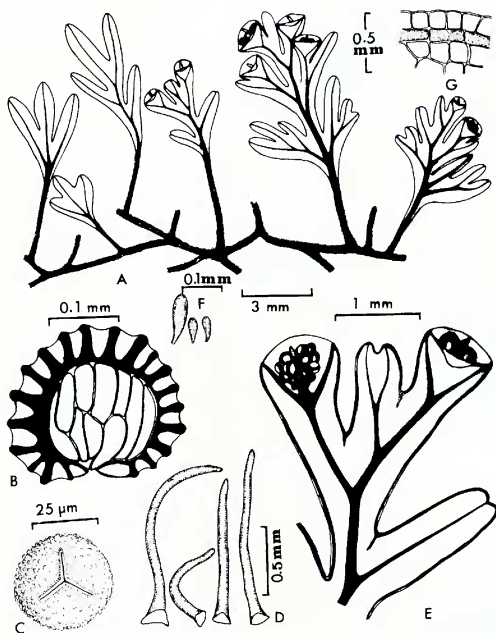


FIG. 1. *Crepidomanes indicum*. A. Habit; B. Sporangium; C. Spores; D. Hairs on rhizome; E. Tip of fertile frond with sori with sporangia; left sorus showing view with one half of the indusium removed; F. Trichomes on veins; G. Details of frond margin with intramarginal pseudovein.

& Hameed in appearance. It shows an affinity to *Microtrichomanes nitidulum* (Bosch) Copel. in indusium shape and to *Microgonium benzaianum* (Parrish ex Hook.) Copel. in the shape of its involucre halves. It differs from *C. agasthianum* in having pinnatifid, dark green fronds with entire margined laminae and cup-shaped, broader than long indusia with dilated but not spreading mouths. *Crepidomanes agasthianum* has pale green, digitate, narrowly segmented fronds with undulate margins and cupular sori with nar-

row mouths subtended by branches of costa running into two long over-topping segments. Sori are characteristic in their dilation of the involucrel mouths as well as in the overfullness of the involucrel halves, which brings about the entire length of receptacle with sporangia visible from the upper view. These characters, along with the extreme dwarfness of the plant, differentiate this new taxon from *C. kurzii*, which is luxuriantly growing in the type locality.

PARATYPES: INDIA. Kerala. Idukki Dt.: Thommankuthu stream, near Thodupuzha, 750 m, 27 Dec 1996, *C.A. Hameed CU 34810* (CALI); Thommankuthu forest, 750 m, 13 Dec 1997, *C.A. Hameed CU 34853* (CALI). Trichur Dt.: Athirapally forest, 1 km above Athirapally waterfall, 800m, 21 Dec 1997, *C.A. Hameed, CU 34859* (CALI); Athirapally waterfall, 21 Dec 1997, *C.A. Hameed CU 34864* (CALI).

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